Colour CCTV Cameras

WV-CP450/WV-CP454

Operating Instructions

(Lens : option)

Panasonic

Before attempting to connect or operate this product,
please read these instructions completely.

ENGLISH VERSION

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK), NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is interned to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

For U.K.

FOR YOUR SAFETY PLEASE READ THE FOLLOWING TEXT CAREFULLY.

WARNING

THIS APPARATUS MUST BE EARTHED
IMPORTANT

The wires in this mains lead are coloured in accordance with the following code.

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wire in the mains lead of this appliance may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows.

The wire which is coloured **green-and-yellow** must be connected to the terminal in the plug which is marked with the letter E or by the earth symbol ⏚ or coloured **green** or **green-and-yellow**.

The wire which is coloured **blue** must be connected to the terminal in the plug which is marked with the letter N or coloured **black**.

The wire which is coloured **brown** must be connected to the terminal in the plug which is marked with the letter L or coloured **red**.

The serial number of this product may be found on the top of the unit.
You should note the serial number of this unit in the space provided and retain this book as a permanent record of your purchase to aid identification in the event of theft.

Model No._____

Serial No._____

WARNING:
TO PREVENT FIRE OR ELECTRIC SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

We declare under our sole responsibility that the product to which this declaration relates is in conformity with the standards or other normative documents following the provisions of Directives EEC/73/23 and EEC/89/336.

Noi dichiariamo sotto nostra esclusiva responsabilità che il prodotto a cui si riferisce la presente dichiarazione risulta conforme ai seguenti standard o altri documenti normativi conformi alle disposizioni delle direttive CEE/73/23 e CEE/89/336.

Wij verklaren als enige aansprakelijke, dat het product waarop deze verklaring betrekking heeft, voldoet aan de volgende normen of andere normatiefve dokumenten, overeenkomstig de bepalingen van Richtlijnen 73/23/EEC en 89/336/EEC.

Vi erklærer os eneansvarlige for, at dette produkt, som denne deklaration omhandler, er i overensstemmelse med den følgende standarder eller andre normative dokumenter i følge bestemmelserne i direktivene 73/23/EEC og 89/336/EEC.

Vi deklarerar härmed värt fulla ansvar för att den produkt till vilken denna deklaration hänvisar är i överensstämmelse med standarddokument, eller andra normativa dokument som framstölls i Direktiv 73/23/EEC och 89/336/EEC.

Ilmoitamme yksinomaisella vastuullamme, että tuote, jota tämä ilmoitus koskee, noudattaa seuraavia standardeja tai muita ohjeellisia asiakirjoja, jotka noudattavat direktiivien 73/23/EEC ia 89/336/EEC. säädöksiä.

Vi erklærer oss alene ansvarlige for at produktet som denne erklæringen gjelder for, er i overensstemmelse med følgende normer eller andre normgivende dokumenter som fælger bestemmelsene i direktiven 73/23/EEC og 89/336/EEC.

For Australia

THIS APPARATUS MUST BE EARTHED.

To ensure safe operation the three-pin plug supplied must be inserted only into a standard three-pin power point which is effectively earthed through the normal household wiring. Extension cords used with the equipment must be three-core and be correctly wired to provide connection to earth. Wrongly wired extension cords are a major cause of fatalities.

The fact that the equipment operates satisfactorily does not imply that the power point is earthed and that the installation is completely safe. For your safety, if in any doubt about the effective earthing of the power point, consult a qualified electrician.

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PREFACE

Panasonic's WV-CP450 series colour digital camera introduces a new level of high picture quality and high resolution through the use of a 1/3-inch interline transfer CCD image sensor having 752 horizontal pixels (picture elements), and digital signal processing LSI's. This model offers cutting-edge technology for advanced video surveillance.

FEATURES

1. The following functions are built in.
   (1) Auto Light Control (ALC)/Electronic Light Control (ELC)
   (2) The SUPER-D function eliminates interference by strong background lighting which makes the camera picture dark, such as a spotlight. Dynamic range of 40 dB.
   (3) Various External Sync Functions, including Gen-Lock
   (4) Auto/Manual White Balance Function
   (5) Electronic Shutter Function
2. Signal-to-noise ratio of 50 dB
3. Minimum illumination of 3 lux (0.3 footcandle) with F 1.4 lenses.
4. Minimum illumination of 0.9 lux (0.09 footcandle) with Panasonic aspherical high speed (F0.75) lenses.
5. 480 lines of horizontal resolution
6. High quality picture:
   (a) 2H type vertical enhancer for greater picture sharpness
   (b) Chroma averaging circuit for better colour signal to noise ratio
   (c) Minimum of aliasing on fine objects
   (d) Expanded dynamic range by use of knee circuit
   (e) Highlight aperture correction for greater picture detail of bright object
7. Ability to shoot indoor scenes with fixed iris lens by use of Electronic Light Control (ELC) function.

PRECAUTIONS

1. **Do not attempt to disassemble the camera.**
   To prevent electric shock, do not remove screws or covers.
   There are no user serviceable parts inside. Ask a qualified service person for servicing.

2. **Handle the camera with care.**
   Do not abuse the camera. Avoid striking, shaking, etc. The camera could be damaged by improper handling or storage.

3. **Do not expose the camera to rain or moisture, or try to operate it in wet areas.**
   Turn the power off immediately and ask a qualified service person for servicing. Moisture can damage the camera and also create the danger of electric shock.

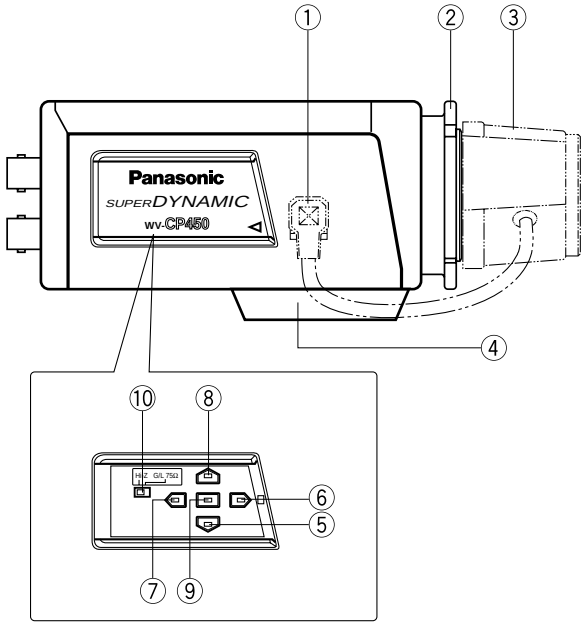
4. **Do not use strong or abrasive detergents when cleaning the camera body.**
   Use a dry cloth to clean the camera when dirty.
   In case the dirt is hard to remove, use a mild detergent and wipe gently.

5. **Clean the CCD faceplate with care.**
   Do not clean the CCD with strong or abrasive detergents. Use lens tissue or a cotton tipped applicator and ethanol.

6. **Never face the camera towards the sun.**
   Do not aim the camera at bright objects. Whether the camera is in use or not, never aim it at the sun or other extremely bright objects. Otherwise, blooming or smear may be caused.

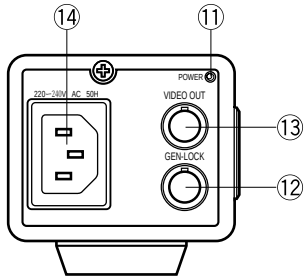
7. **Do not operate the camera beyond the specified temperature, humidity or power source ratings.**
   Use the camera under conditions where temperature is between –10°C - +50°C (14°F - 122°F), and humidity is below 90%. The input power source is 220 - 240V AC 50Hz for WV-CP450 and DC 12V/AC 24V for WV-CP454.

MAJOR OPERATING CONTROLS AND THEIR FUNCTIONS

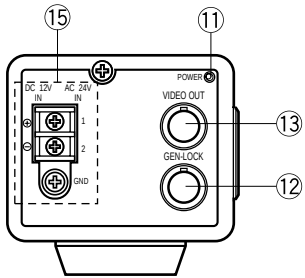


Slide the panel to the left until it locks.

<WV-CP450>



<WV-CP454>



① **Auto Iris Lens Connector**
This connector is used to connect with the auto iris lens by a 4-pin male connector that is supplied as a standard accessory (Part No. YFE4191J100).

② **Back Focal Adjusting Ring**
This ring is used to adjust the back focal length or picture focus. Rotate this ring clockwise for a C-mount lens or counterclockwise for a CS-mount lens.

③ **Lens (Option)**

④ **Camera Mounting Screw Hole**
This hole is used to mount the camera onto a mounting bracket.

⑤ **Down Button ( )**
This button is used to move the cursor downward. It is also used to select items in the CAM SET UP menu.

⑥ **Right Button ( )**
This button is used to move the cursor to the right. It is also selects the mode and can be used to adjust some levels.

⑦ **Left Button ( )**
This button is used to move the cursor to the left. It also selects the mode and can be used to adjust some levels.

⑧ **Up Button ( )**
This button is used to move the cursor upward. It is also used to select items in the CAM SET UP menu.

⑨ **Set Button ( )**
This button is used to activate an item selected in the CAM SET UP menu.

⑩ **Gen-lock Termination Switch (Hi-Z, G/L 75Ω)**
Set this switch to Hi-Z when a gen-lock video input signal is looped through. In all other cases, set this switch to 75Ω.

⑪ **Power indicator**
This indicator lights up when the power of this camera is on.

⑫ **Gen-lock Input Connector (GEN-LOCK)**
This connector is used to connect an external system for synchronization.

⑬ **Video Output Connector (VIDEO OUT)**
This connector is used to connect with the VIDEO IN connector of the monitor.

⑭ **Power Cord Socket**
This socket is used to connect the power cord (supplied as a standard accessory).

⑮ **AC/DC Compatible Input Terminal (DC 12V IN/AC 24V IN)**
This terminal is for connecting the 12 V DC or 24 V AC power supply cord.

Caution:
Connect to 12V DC (10.5V-16V) or 24V AC (19.5V-28V) class 2 power supply only. Make sure to connect the grounding lead to the GND terminal when the power is supplied from a 24V AC power source.

CONNECTIONS

A. WV-CP450 (220 - 240V AC 50Hz)

1. Connect the AC power cord (supplied as standard accessory) to the power cord socket of the camera.
2. Connect the AC power cord to an electrical outlet of 220 - 240V AC 50 Hz.

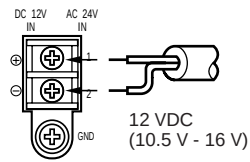
Notes:

- Connect the power cord firmly.
- The power cord should be long enough for panning and tilting.
  If the cable is too short, the power cord plug may be pulled off the camera when the camera pans or tilts.

B. WV-CP454 (12V DC/24V AC)

The WV-CP454 has an AC/DC compatible input terminal. The 12V DC or 24V AC power supply cord can be connected to this terminal. The camera detects the power source automatically.

1. **12 V DC Power Supply**
   Connect the power cord to the AC/DC compatible input terminal on the rear panel of the camera.



12 VDC
(10.5 V - 16 V)

Resistance of copper wire [at 20°C (68°F)]

Copper wire size (AWG)	#24 (0.22mm²)	#22 (0.33mm²)	#20 (0.52mm²)	#18 (0.83mm²)
Resistance Ω/m	0.078	0.050	0.030	0.018
Resistance Ω/ft	0.026	0.017	0.010	0.006

- Calculation method of maximum cable length between camera and power supply.

  $10.5V\ DC \leq V_A - (R \times 0.42 \times L) \leq 16V\ DC$

  L : Cable length (meter)

  R : Resistance of copper wire (Ω/meter)

  V_A : DC output voltage of power supply unit

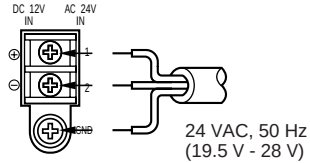
$$L\ standard = \frac{V_A - 12}{0.42 \times R}\ (meters)$$

$$L\ minimum = \frac{V_A - 16}{0.42 \times R}\ (meters)$$

$$L\ maximum = \frac{V_A - 10.5}{0.42 \times R}\ (meters)$$

2. 24 V AC Power Supply

Connect the power cable to the AC/DC compatible input terminal on the rear panel of the camera.

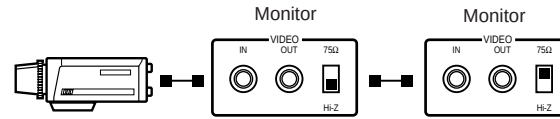


Recommended wire gauge sizes for 24V AC line.

Copper wire size (AWG)		#24 (0.22mm²)	#22 (0.33mm²)	#20 (0.52mm²)	#18 (0.83mm²)
Length of Cable (Approx.)	(m)	95	150	255	425
	(ft)	314	495	842	1 403

Video Cable

1. It is recommended to use a monitor whose resolution is at least equal to that of the camera.
2. Set the termination switch to the 75Ω position on the last monitor.
   A. Use a 75Ω coaxial cable.
   B. Set the termination switch to the 75Ω position on the last monitor and to the Hi-Z position on the other monitors. Do not change the positions after setting.



C. The maximum extensible coaxial cable length between the camera and the monitor is shown below.

Type of coaxial cable		RG-59/U (3C-2V)	RG-6U (5C-2V)	RG-11/U (7C-2V)	RG-15/U (10C-2V)
Recommended maximum cable length	(m)	250	500	600	800
	(ft)	825	1 650	1 980	2 640

3. Wiring precautions:
- Do not bend the coaxial cable into a curve whose radius is smaller than 10 times the cable's diameter.
- Never staple the cable even if with circular staples. Impedance mismatching will occur.
- Never crush or pinch the cable.

  All of the above will change the impedance of the cable and cause poor picture quality.

Installation of Auto Iris Lens Connector

Install the lens connector (YFE4191J100) when using a video drive ALC lens.

The installation should be made by qualified service personnel or system installers.

(1) Cut the iris control cable at the edge of the lens connector to remove the existing lens connector and then remove the outer cable cover as shown in the diagram below.

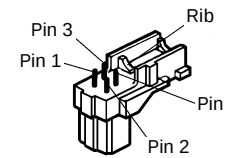
The pin assignment of the lens connector is as follows:

Pin 1: Power source; +9V DC, 50mA Max.

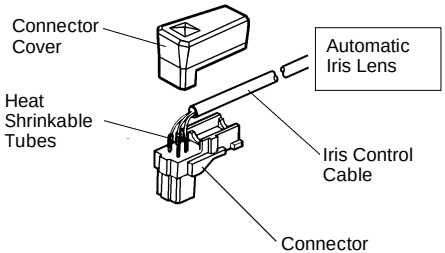
Pin 2: Not used

Pin 3: Video signal; 1.3 V[p-p]/40 kΩ

Pin 4: Shield, ground



(2) After connection, assemble the lens connector as follows.



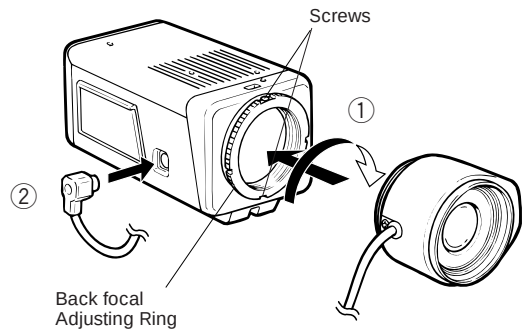
Note: When the iris control cable is too thick to lock the connector cover with the connector base, cut off the rib on the connector.
(Select VIDEO for LENS DRIVE of the CAM SET UP menu.)

Mounting the Lens

Caution:

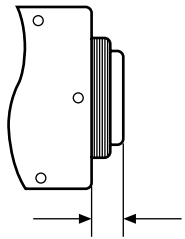
Before you mount the lens, loosen the two screws on the ring, and rotate this ring clockwise until it stops. If the ring is not at the end, the inner glass or CCD image sensor may be damaged.

1. Mount the lens by turning it clockwise on the lens mount of the camera.
2. Connect the lens cable to the auto iris lens connector on the side of the camera.



Caution for Mounting the Lens

The lens mount should be a C-mount or CS-mount (1”-32UN) and the lens weight should be less than 450g (0.99 lbs). If the lens is heavier, both the lens and camera should be secured by using the supporter.
The protrusion at the rear of the lens should be as shown below:

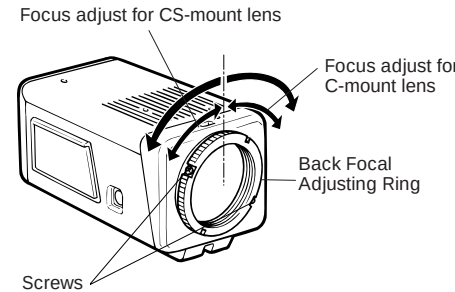


C-mount: Less than 13 mm (1/2”)
CS-mount: Less than 8 mm (5/16”)

FOCUS OR BACK FOCAL ADJUSTMENT

The following adjustment should be made by qualified service personnel or system installers.

1. Loosen the screws on the back focal adjusting ring.



2. Turn the back focal adjusting ring to the desired position.
   Caution: When the C-mount lens is mounted, do not rotate the ring counterclockwise by force after it. If the ring is rotated by force, the inner lens or CCD image sensor may be damaged.
3. Tighten the screws on the back focal adjusting ring.

INSTALLATION OF CAMERA

- **Mounting from the bottom**

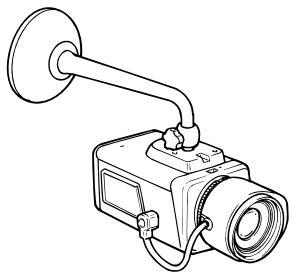
  This camera is designed to be mounted from the bottom, as shown below. The mounting hole is a standard photographic pan-head screw size (1/4" - 20).

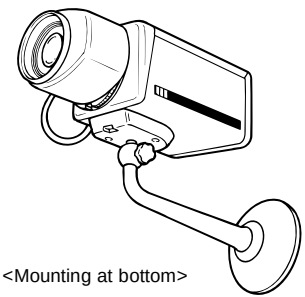
- **Mounting from the top**

  Remove the mount adapter from the bottom of the camera by removing the two fixing screws. Attach the mount adapter to the top as shown in the diagram, then mount the camera on the mounting bracket.

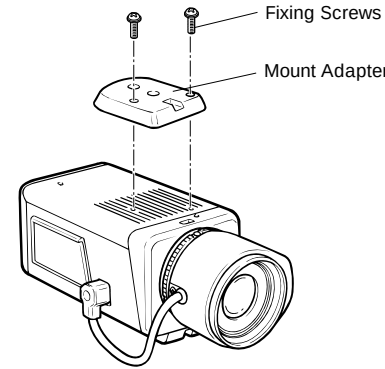
  Make sure that the two original fixing screws are used when mounting the mount adapter as longer length screws may damage inner components.

<Mounting at top>





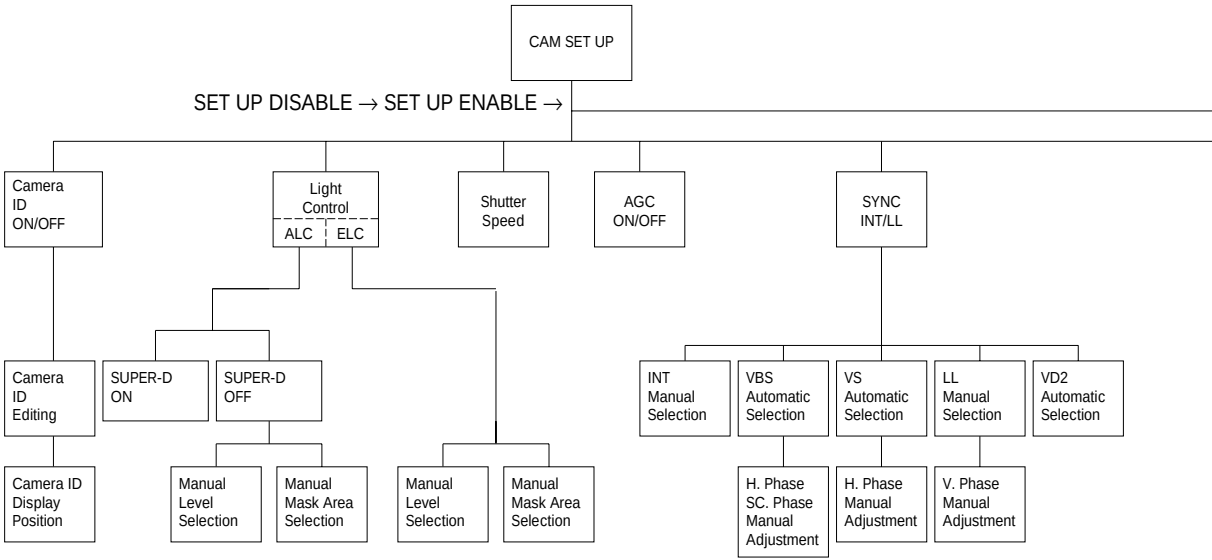
<Mounting at bottom>

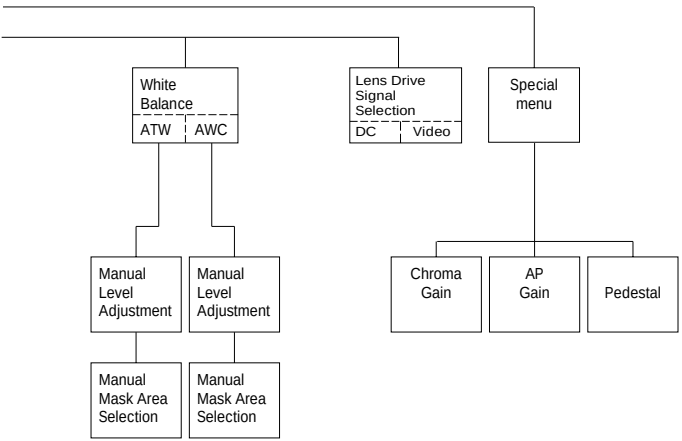


SET UP

1. CAMERA SETUP MENU

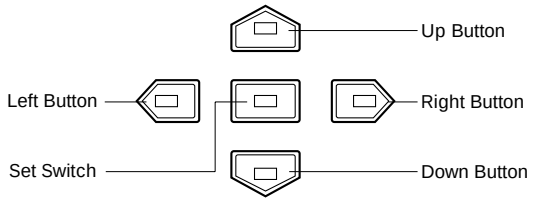
This camera utilizes a user setup menu that is displayed on-screen.
The setup menu contains various items that form a tree-type structure as shown below.
It menu is described in the following section : "2. SETUP OPERATION".




White Balance
ATW
AWC
Lens Drive Signal Selection
DC
Video
Special menu
Manual Level Adjustment
Manual Level Adjustment
Manual Mask Area Selection
Manual Mask Area Selection
Chroma Gain
AP Gain
Pedestal

2. SETUP OPERATION

This camera utilizes a user setup menu (CAM SET UP) that is displayed on the monitor.
To set items on the CAM SET UP menu, use the following buttons on the side panel.



Up Button **(** **)**: This button is used to move the cursor upwards. Use this button to select an item or adjust the parameters.

Down Button **(** **)**: This button is used to move the cursor downwards. Use this button to select an item or adjust the parameters.

Right Button **(** **)**: This button is used to move the cursor to the right. Use this button to select or adjust the parameters of the selected item. The parameter changes each time this button is pressed.

Left Button **(** **)**: This button is used to move the cursor to the left. Use this button to select or adjust the parameters of the selected item. The parameter changes each time this button is pressed.

Set Button **(** **)**: This button is used to set the determined parameter. If the item has its own setting menu (↴ indicates that the setting menu exists), press this button to display the setting menu.

• All Reset Operation

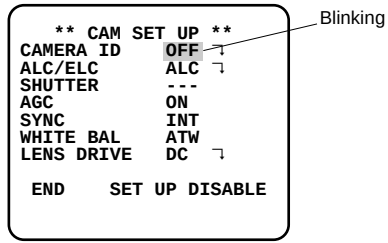
All Reset allows you to reset all setup menu items to the factory settings if you are unsure about the correct settings. Proceed as follows:

(1) Make sure that the CAM SET UP menu is not displayed (a camera picture is displayed).

(2) While pressing both and , press for a few seconds. The words ALL RESET momentarily appear on the monitor.
At this time all adjustments and parameters are reset to the factory default settings.

• Opening the Setup Menu

Press and hold down ▭ for a second or longer.

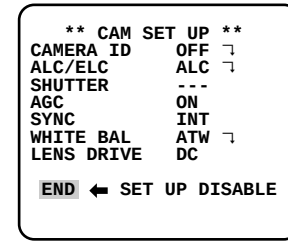


The CAM SET UP menu appears on the monitor as shown above.

Check the current settings on the menu.

Refer to the sections below for a detailed description of menu items. If you decide not to make any changes after checking the current settings, move the cursor to END at the start of the bottom line, and press ▭ to close the CAM SET UP menu and return to normal camera picture mode.

Note: If no button is pressed for 6 minutes while the CAM SET UP menu or any other setting menu is displayed, displaying the menu is automatically canceled and the mode returns to the normal camera picture.



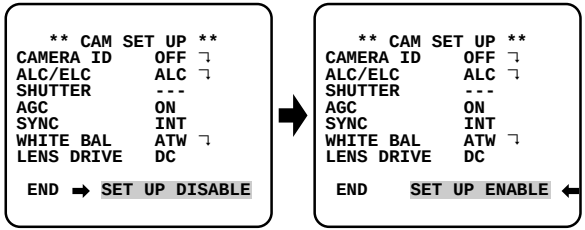
• Editing the CAM SET UP Menu

Important Notices:

When the words SET UP DISABLE appear on the bottom line of the CAM SET UP menu, you cannot change the currently active settings. This is to prevent accidental changing of the settings.

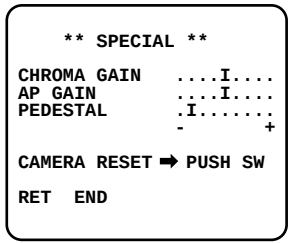
To edit the CAM SET UP menu (change settings), use ⏢ and ⏣ or ⏴ and ⏵ to move the cursor to SET UP DISABLE in the bottom line.

Press ▭. SET UP DISABLE changes to SET UP ENABLE. Move the cursor to END, then to the item(s) you want to change.



• Editing the SPECIAL menu

To edit the SPECIAL menu (change settings), proceed as for editing the CAM SET UP menu above.
Move the cursor to END after the words SET UP ENABLE appear. Then press ◁ and ▷ simultaneously for 2 seconds or longer.
The SPECIAL menu appears on the monitor. Select the item to be changed and change the setting as described for the CAM SET UP menu.



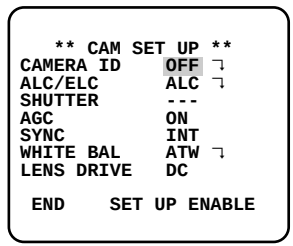
Important Notice:

When the cursor is moved to END and the CAM SET UP menu closed after changing the parameters, the new values are stored in the EEPROM (Electric Erasable and Programmable Read Only Memory). These values remain valid until new values are stored, even if the power of the camera is off.

SETTING PROCEDURES

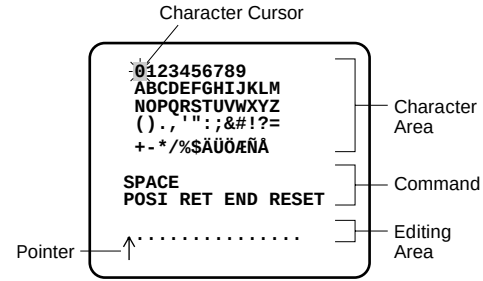
1. Camera Identification (CAMERA ID) Setting

You can use the camera identification (CAMERA ID) to assign a name to the camera. The camera ID consists of up to 16 alphanumeric characters. You can select whether to have the camera ID displayed on the monitor screen or not.



To edit the CAMERA ID

1. Move the cursor to the CAMERA ID parameter.
2. Press [▭]. The CAMERA ID menu appears. The cursor on the letter "0" starts blinking.



CAMERA ID menu

3. Move the cursor to the character you want to change by pressing [◁] / [▷] / [△] / [▽].
4. After selecting the character, press [▭]. The selected character appears in the editing area. (The pointer in the editing area moves to the right automatically at this moment.)
5. Repeat the steps above until all characters are edited.

To enter a blank space in the CAMERA ID

Move the cursor to SPACE and press [▭].

To edit a specific character in the CAMERA ID

1. Move the cursor to the editing area by pressing [▽].

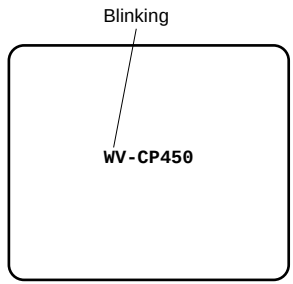
2. Move the pointer to the character to be edited by pressing ◁ or ▷. Then move the cursor to the character area and select a new character.
3. Press ▭ to determine the CAMERA ID.

To erase all characters in the editing area

Move the cursor to RESET and press ▭. All characters in the editing area disappear.

To determine the display position of the CAMERA ID

1. Move the cursor to POSI, and press ▭. The display shown below appears and the CAMERA ID starts blinking.



2. Move the CAMERA ID to the desired position by pressing ◁ / ▷ / △ / ▽.
3. Press ▭ to fix the position of the CAMERA ID. The mode returns to the previous CAMERA ID menu.

Notes:

- The CAMERA ID stops at the edges of the monitor screen.
- The CAMERA ID moves faster if any of ◁ / ▷ / △ / ▽ is kept pressed for a second or longer.

To return to the CAM SET UP menu

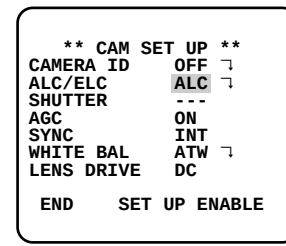
Move the cursor to RET and press ▭. The CAM SET UP menu appears.

2. Light Control Setting (ALC/ELC)

You can select the light control mode according to the lens type.

ALC: If you use the auto iris lens, select this parameter.

ELC: If you use a fixed or manual iris lens, select this parameter.

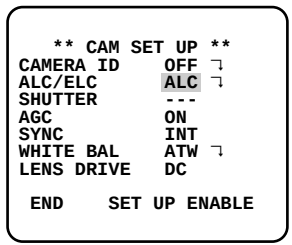


1. Move the cursor to the ALC/ELC parameter.
2. Select ALC or ELC.

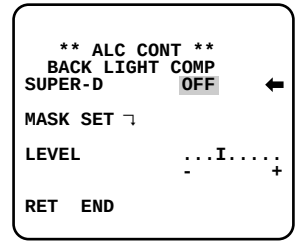
2-1. ALC Mode with SUPER-D ON

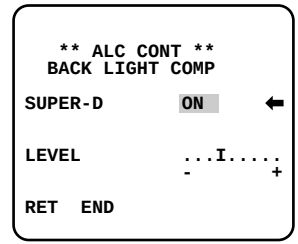
Super Dynamic Function (SUPER-D)

The important object in a scene is usually placed in the centre of the monitor's screen. In SUPER-D mode, more photometric weight is given to the centre of the screen (where the important object is located) than to the edge of the picture (where a bright backlight would most likely be located). You can use the SUPER-D function if you select ALC. It eliminates interference by strong background lighting which makes the camera picture dark, such as a spotlight.



1. Press ▭ after selecting ALC, the ALC CONT menu appears.
2. Move the cursor to the SUPER-D parameter and select ON.



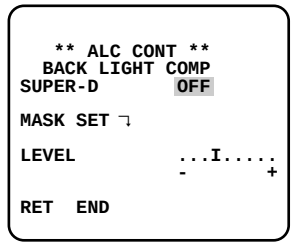


3. If you want to adjust the video output level, move the cursor to the "I" position. Adjust to the desired level by pressing ◁ or ▷.
4. Move the cursor to RET and press ▭ to return to the CAM SET UP menu. (To return to the camera picture, move the cursor to END and press ▭.)

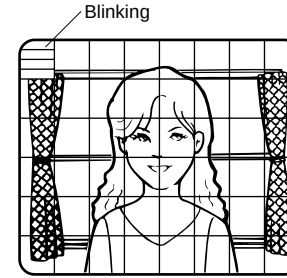
2-2. ALC Mode with SUPER-D OFF and ELC Mode

Note: If ELC is selected, set MASK SET according to this procedure.

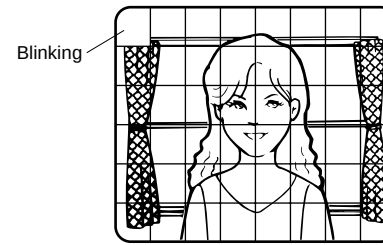
1. Move the cursor to the SUPER-D parameter and select OFF. (When you select ELC, SUPER-D is not available.) The item MASK SET appears on the menu.



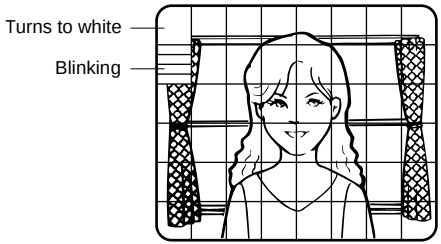
2. Move the cursor to MASK SET and press ▭. The 48 mask areas appear on the monitor screen. The cursor is blinking in the top left corner of the screen.



3. Move the cursor to the area where backlight is bright and press ▭ to mask that area. The mask turns white. (When the cursor is moved on an area that has already been masked, the mask and cursor start blinking.)



4. Repeat step 1 to 3 to mask the desired area.To cancel masking, move the cursor to that area and press ▭ .



5. After masking is completed, press ▭ for 2 seconds or longer. The ALC CONT menu appears.
6. If you want to change the video output level (picture contrast), move the "I" cursor for LEVEL and adjust the level.
7. Move the cursor to RET and press ▭ to return to the CAM SET UP menu. (To return to the camera picture, move the cursor to END and press the set button.)

3. Shutter Speed Setting (SHUTTER)

Note: When ON is selected for SUPER-D on the ALC CONT menu, this item is not available.
To select electronic shutter speed, select OFF for SUPER-D in the menu.

You can select an electronic shutter speed of 1/50 (OFF), 1/120, 1/250, 1/500, 1/1 000, 1/2 000, 1/4 000, or 1/10 000 seconds.
This function is effective to raise the sensitivity in low light conditions when OFF is selected for ALC.

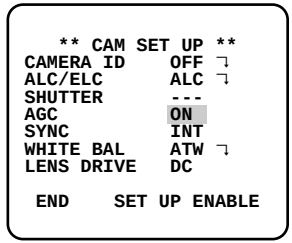
```
   ** CAM SET UP **
CAMERA ID     OFF ┐
ALC/ELC       ALC ┐
SHUTTER       ---
AGC           ON
SYNC          INT
WHITE BAL     ATW ┐
LENS DRIVE    DC

 END     SET UP ENABLE
```

Move the cursor to the SHUTTER parameter and select the electronic shutter speed.
The preset values for SHUTTER (electronic shutter speed) change by pressing ◁ or ▷ as follows:

OFF (1/50) → 1/120 → 1/250 → 1/500
1/10000 ← 1/4000 ← 1/2000 ← 1/1000

4. Gain Control Setting (AGC ON/OFF)

You can set the gain (brightness level portion of an image) to automatic level adjustment (ON) or fixed level(OFF).



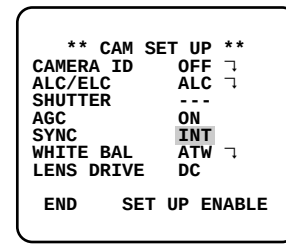
Move the cursor to the AGC parameter and select automatic level adjustment (ON) or fixed level (OFF).

5. Synchronization Setting (SYNC)

You can select internal sync mode (INT) or line-lock mode (LL). Additionally, this model accepts the VBS signal (colour composite video or blackburst signal) and VS signal (B/W composite video or composite sync signal). The VD2 signal (multiplexed vertical drive signal) with the composite video output signal from external equipment such as a Matrix Switcher is also acceptable.

Whenever the VD2 signal is supplied to this camera, the camera automatically switches to the VD2 sync mode.

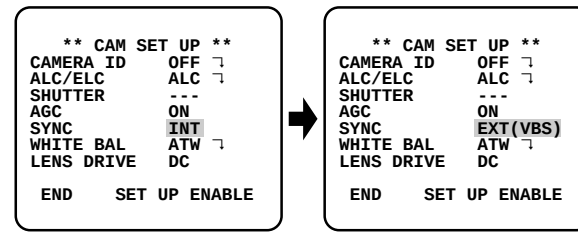
1. Move the cursor to the SYNC parameter and select line-lock(LL) or internal(INT).
2. Press ▭.
   If LL is selected, the SYNC menu appears. (If INT is selected, the synchronization mode is automatically set to internal sync pulse, and the menu is not displayed.)



Important Notice:

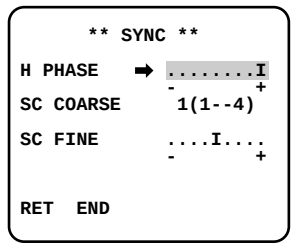
1. The priority for the sync modes is as follows.
    1. Multiplexed Vertical Drive (VD2) (Highest priority)
    2. Line-lock (LL)
    3. Colour Composite Video or Blackburst Signal (VBS)
    4. B/W Composite Video or Composite Sync Signal (VS)
    5. Internal Sync (INT) (Lowest priority)
2. When the internal sync mode is to be used, select INT. No gen-lock input signal should be supplied to the Gen-lock Input Connector on the rear panel.
3. Whenever the multiplexed vertical drive pulse (VD2) is supplied to the camera from an external equipment such as a Matrix Switcher, the camera sync mode is automatically switched to the VD2 mode.
4. When the VBS or VS gen-lock mode is to be used select INT from this menu and supply the gen-lock input signal to the Gen-lock Input Connector on the rear panel.
5. The VBS gen-lock mode has its own menu for horizontal and subcarrier phase adjustments. When the cable length of the video output or the gen-lock input is changed, the horizontal and subcarrier phase must be re-adjusted.
6. The VS gen-lock mode has its own menu for horizontal phase adjustments. When the cable length of the video output or the gen-lock input is changed, the horizontal phase must be re-adjusted.
7. The line-lock mode has its own menu for line-lock vertical phase adjustment. If the camera installation is relocated, check the vertical phase adjustment again since the AC line phase may be different.

5-1. VBS Gen-lock Mode (EXT(VBS))

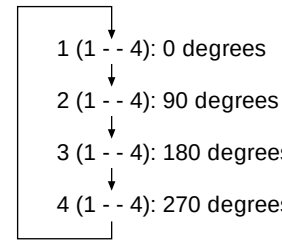


1. Move the cursor to the SYNC parameter and select INT.
2. Connect the coaxial cable for the blackburst or composite colour video signal to the gen-lock input connector.

3. Confirm that the INT parameter changed to EXT (VBS) on the menu.
   Caution: The gen-lock input signal should meet the EIA RS-170A specifications and should not contain jitter, such as a VCR playback signal, as it could disturb synchronization.
4. After confirming that the cursor is on EXT (VBS), press ▭. The phase adjustment menu appears on the monitor.



5. Move the cursor to H.PHASE. The cursor starts blinking.
6. Supply the video output signal of the camera to be adjusted and the reference gen-lock input signal to a dual-trace oscilloscope.
7. Set the oscilloscope to the horizontal rate and expand the horizontal sync portion on the oscilloscope.
8. Adjust the horizontal phase by pressing ◁ or ▷. The adjustable range is 0 - 2.0µs.
9. Move the cursor to SC COARSE. The cursor starts blinking.
10. Press ◁ or ▷ to match the colour (hue) of the camera's video signal, when observed at the output of the Special Effect Generator (SEG) or Switcher, as closely as possible to the colour of the original scene. (SC COARSE adjustment can be incremented in steps of 90 degrees (4 steps) by pressing ◁ or ▷.)
    Note: After the fourth step, the adjustment returns to the first step.



11. Move the cursor to SC FINE. The cursor starts blinking.
12. Press ◁ or ▷ to match the colour (hue) of the camera's video signal, when observed at the output of the Special Effect Generator (SEG) or

Switcher, as closely as possible to the colour of the original scene.
The SC FINE adjustment has a range of 90 degrees of colour shift.

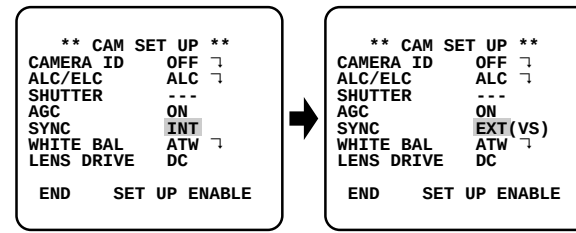
Notes:

- When the “I” cursor reaches the “+” end, it jumps back to “–” . At the same time, SC COARSE is incremented by one step to enable a continuous adjustment. The reverse takes place when the “I” cursor reaches the “–” end.
- When ◁ or ▷ is kept pressed for a second or more, the “I” cursor moves quickly.
- For more accurate adjustment, supply both the original camera video output signal and the effect output video signal (program output video signal) of the special effects generator (SEG) to a vectorscope and compare the chroma phase of both signals.
- To reset SC COARSE and SC FINE to the values preset at the factory, press ◁ or ▷ simultaneously. SC COARSE is reset to the factory setting.

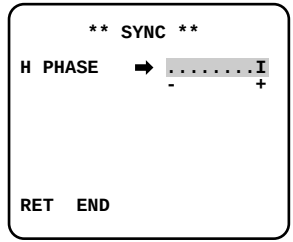
5-2. VS Gen-lock Mode (EXT(VS))

1. Move the cursor to the SYNC parameter and select INT.
2. Connect the coaxial cable for the composite sync or composite B/W video signal to the gen-lock input connector.
3. Confirm that the parameter INT changed to EXT (VS) on the menu.

   Caution: The gen-lock input signal should meet with EIA RS-170 specifications and should not contain jitter, such as a VCR playback signal , as it could disturb synchronization.



4. After confirming the cursor is on EXT (VS), press ▭ . The phase adjustment menu appears on the monitor.



5. Move the cursor to H PHASE. The cursor starts blinking.
6. Supply the video output signal of the camera to be adjusted and the reference gen-lock input signal to a dual-trace oscilloscope.
7. Set the oscilloscope to the horizontal rate and expand the horizontal sync portion on the oscilloscope.
8. Adjust the horizontal phase by pressing ◁ or ▷. The adjustable range is 0 - 2.0µs.

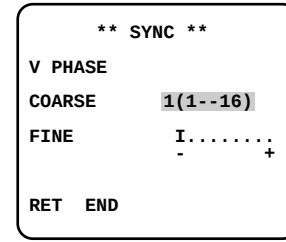
5-3. Line-lock Sync Mode (LL)

Note: The line-lock (LL) sync mode is not available when the camera operates on DC power.

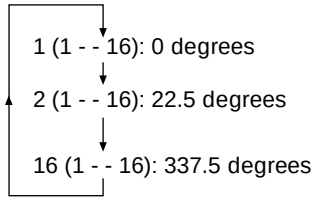
1. Move the cursor to the SYNC parameter and select LL.

   Note: The settings in this menu can be made only when the multiplexed vertical drive signal (VD2) is not supplied to the camera.

2. After confirming the cursor is on LL, press ▭. The vertical phase adjustment menu appears on the monitor.



3. Move the cursor to COARSE. The cursor starts blinking.
4. Supply the video output signal of the camera to be adjusted and the reference camera video output signal to a dual-trace oscilloscope.
5. Set the oscilloscope to the vertical rate and expand the vertical sync portion on the oscilloscope.
6. Press ◁ or ▷ to match the vertical phase for both video output signals as closely as possible. (COARSE adjustment can be incremented in 16 steps by 22.5 degrees by pressing ◁ or ▷.)



Note: After the sixteenth step, the adjustment returns to the first step.

7. Move the cursor to FINE. The cursor starts blinking.
8. Press ◁ or ▷ to match the vertical phase for both video output signals as closely as possible. (FINE adjustment can be made up to 22.5 degrees by pressing ◁ or ▷.)

   Notes:
   - When the "I" cursor reaches the "+" end, it jumps back to "–". At the same time, COARSE is incremented by one step to enable a continuous adjustment. The reverse takes place when the "I" cursor reaches the "–" end.
   - When ◁ or ▷ is kept pressed for a second or longer, the "I" cursor moves faster.
   - To reset COARSE and FINE to the values preset at the factory, press ◁ or ▷ simultaneously. COARSE and FINE adjustments are preset at the factory to zero-crossing of the AC line phase.
   - If the AC line contains noise (spike noise, etc.), the stability of the vertical phase of the camera video output signal may be disturbed.

6. White Balance Setting (WHITE BAL)

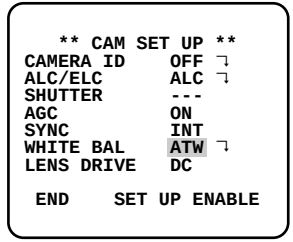
6-1. Auto-Tracing White Balance Mode (ATW)

You can select one of two modes for white balance adjustment as follows:

- **ATW (Auto Tracing White Balance)**
  In this mode, the colour temperature is monitored continuously and thereby white balance is set automatically. The colour temperature range for the proper white balance is approximately 2 600 - 6 000K. Proper white balance may not be obtained under the following conditions:
  1. The colour temperature is out of the 2 600 - 6 000K range.
  2. When the scene contains mostly high colour temperature objects, such as a blue sky or sunset.
  3. When the scene is dim.

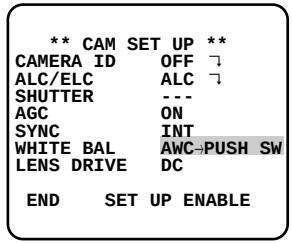
  In these cases, select the AWC mode.

Move the cursor to the WHITE BAL parameter and select ATW. The white balance of the camera is automatically set.

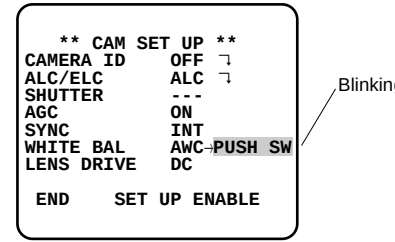


- **Automatic White Balance Control Mode (AWC)**
  In this mode, accurate white balance is obtained within a colour temperature range of approximately 2 300-10 000K.

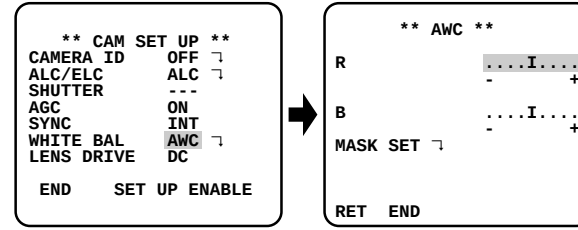
1. Move the cursor to the WHITE BAL parameter and select AWC → PUSH SW.



2. Press ▭ to start the white balance setup. The words PUSH SW start blinking to indicate that the white balance is being set.



3. When the white balance setting is completed, the words PUSH SW stop blinking.
4. When you want to adjust the white balance manually, press ▷ to select AWC and press ▭. The AWC menu appears on the monitor. (When ATW is selected, pressing ▭ displays the ATW menu.)



Fine Adjustment for AWC (ATW) Manually

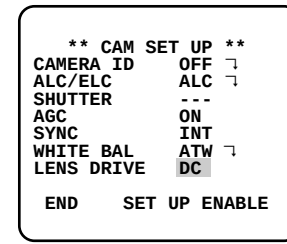
You can add the detailed setting for white balance setting manually.

1. To set MASK SET, proceed as described in steps 1 to 4 of “ALC mode with SUPER-D OFF and ELC mode” on page 22.
2. Move the cursor to R.
3. Press ◁ or ▷ to obtain the optimum amount of red gain.
4. Move the cursor to B.
5. Press ◁ or ▷ to obtain the optimum amount of blue gain.

Note: When you need to set MASK SET, re-adjust to obtain the optimum amount of red and blue gain.

7. Lens Drive Signal Selection (LENS DRIVE)

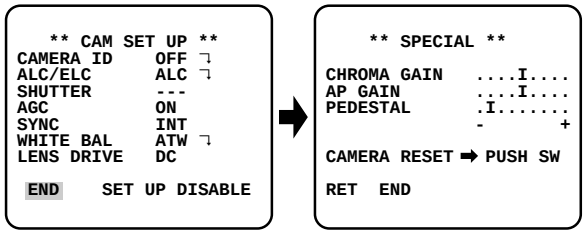
This item is used to select the type of auto iris lens drive signal to be supplied to the lens from the auto iris lens connector.



1. Move the cursor to the LENS DRIVE parameter.
2. Select DC if you are using the auto iris lens that requires a DC drive signal.
   Select VIDEO if you are using the auto iris lens that requires a video drive signal.

8. Special Menu

This menu lets you adjust and set up the video signal of the camera to meet your requirements.
Move the cursor to END on the bottom line of the CAM SET UP menu and press ◁ or ▷ simultaneously for 2 seconds or longer. The SPECIAL menu appears on the monitor as shown below.



8-1. Chroma Level Setting (CHROMA GAIN)

1. Move the cursor to the CHROMA GAIN parameter.
2. While observing the vectorscope or colour video monitor, move the "I" cursor to adjust the chroma level.

8-2. Aperture Gain Setting (AP GAIN)

1. Move the cursor to the AP GAIN parameter.
2. While observing the vectorscope or video monitor, move the "I" cursor to adjust the aperture gain level.

8-3. Pedestal Level Setting (PEDESTAL)

1. Move the cursor to the PEDESTAL parameter.
2. While observing the waveform monitor/oscilloscope or video monitor, move the "I" cursor to adjust the pedestal level (black level).

To reset to the factory settings

1. Move the cursor to the CAMERA RESET parameter. The words PUSH SW start blinking.
2. While holding down ◁ and ▷, press ▭ for 2 seconds or longer. The camera is reset to the factory settings.

To close the SPECIAL menu and return to the CAM SET UP menu

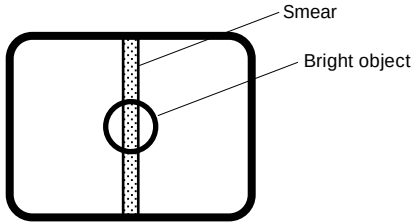
Move the cursor to RET and press ▭.

To close the SPECIAL menu and return to the camera picture

Move the cursor to END and press ▭.

PREVENTION OF BLOOMING AND SMEAR

When the camera is aimed at a bright light, such as a spotlight, or a surface that reflects bright light, smear or blooming may appear. Therefore, the camera should be operated carefully in the vicinity of extremely bright objects to avoid smear or blooming.



SPECIFICATIONS

Pick-up Device:	752 (H) x 582 (V) pixels, Interline Transfer CCD
Scanning Area:	4.9 (H) x 3.7 (V) mm (Equivalent to scanning area of 1/3” pick-up tube)
Scanning:	625 lines / 25 fields / 25 frames
Horizontal:	15.625 KHz
Vertical:	50.00 Hz
Synchronization:	Internal, Line-locked, External (VS/VBS) or Multiplexed Vertical Drive (VD2) Selectable
Video Output:	1.0 V[p-p] PAL composite 75 Ω / BNC connector
Horizontal Resolution:	480 lines
Signal-to-Noise Ratio:	50 dB (AGC OFF, weight ON)
Dynamic Range:	40 dB
Minimum Illumination:	0.9 lx (0.09 footcandle) at F0.75 [Equivalent to 3 lx (0.3 footcandle) at F1.4]
Gain Control:	Selectable AGC ON or OFF (SET UP MENU)
White Balance:	Selectable ATW or AWC (SET UP MENU)
Aperture:	Set Variable (SET UP MENU)
Electronic Light Control:	Equivalent to continuous variable shutter speed between 1/50 second and 1/10 000 second
Back Light Compensation:	Selectable Preset On or Off (SET UP MENU)
Electronic Shutter Speed:	Selectable 1/50 (OFF), 1/120, 1/250, 1/500, 1/1 000, 1/2 000, 1/4 000, 1/10 000 second
Lens Mount:	Selectable C-mount or CS-mount
ALC Lens:	Selectable DC or Video
Ambient Operating Temperature:	–10°C - +50°C (14°F - 122°F)
Ambient Operating Humidity:	Less than 90%

Power Source and Power Consumption:	WV-CP450:	220 - 240V AC 50 Hz, 5.3W
	WV-CP454:	24V AC 50 Hz, 5.2W 12V DC, 540 mA
Dimensions (without lens):	67 (W) x 55 (H) x 123 (D) mm [2-5/8” (W) x 2-3/16” (H) x 4-13/16” (D)]	
Weights (without lens):	WV-CP450:	0.405 kg (0.89 lbs.) (without power cord)
	WV-CP454:	0.405 kg (0.89 lbs.)

Weights and dimensions indicated are approximate.
Specifications are subject to change without notice.

STANDARD ACCESSORIES

Body Cap .....1 pc.
ALC Lens Connector (YFE4191J100) .....1 pc.
AC Power Cord (for only WV-CP450).....1 pc.

OPTIONAL ACCESSORIES

Lenses : WV-LA2R8C3B, WV-LA4R5C3B, WV-LA9C3B, WV-LA210C3, WV-LA408C3, WV-LA908C3
WV-LZ61/10, WV-LZ62/2, WV-LF4R5C3A, WV-LF9C3A

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Central P.O. Box 288, Osaka 530-91, Japan

N0797-1087 YWV8QA4715BN Printed in Japan
Ⓝ 30 Gedruckt in Japan
Imprimé au Japon
Impreso en Japón

طبع في اليابان